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(54) Title: HYPOXIC FIRE PREVENTION AND FIRE SUPPRESSION SYSTEMS AND BREATHABLE FIRE EXTINGUISHING COMPOSITIONS FOR HUMAN OCCUPIED ENVIRONMENTS

(57) Abstract: Fire prevention and suppression systems and breathable fire-extinguishing compositions are provided for rooms, houses and buildings, transportation tunnels and vehicles, underground and underwater facilities, marine vessels, submarines, passenger and military aircraft, space stations and vehicles, military installations and vehicles, and all other human occupied objects and facilities. The system provides a breathable hypoxic fire-preventative atmosphere at standard atmospheric or local ambient pressure. The system employs an oxygen-extraction apparatus supplying oxygen-depleted air inside a human-occupied area or storing it in a high-pressure container for use in case of fire. A breathable fire-extinguishing composition is introduced for constant fire-preventive environments, being mostly a mixture of nitrogen and oxygen and having oxygen content ranging from 12 % to 17 %. A fire-suppression system is provided employing a fire-extinguishing composition with oxygen concentration under 16 %, so when released it creates a breathable fire-suppressive atmosphere having oxygen concentration from 10 % to 16 % with possible addition of carbon dioxide. A technology for automatically maintaining a breathable fire-preventive composition on board a human-occupied hermetic object is provided by introducing inert ballast that automatically maintains oxygen content under the Hypoxic Threshold. An aircraft fire suppression system utilizing a hypoxic fire suppression agent is provided for producing breathable atmosphere onboard having fire-extinguishing properties.

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